

Date: *January 8, 2010*

Title: 7.2 Functions and Graphs

Objective:

To find out what the graphs of functions have in common.

IN:

Is the equation $y = 2x - 1$ a function?

Why or why not?



The Prankster

Input	Output
\$1.00	Magic re-lighting candles
\$2.00	Booger-flavored Jelly Beans
\$1.50	Whoopee cushion
\$1.20	Fake Lottery Ticket
\$5.00	23" long rubber chicken
\$4.50	Fake snake in a peanut can
\$0.01	Mr. Biller's pro teacher card...collectible!



W2L:

The Prankster Machine **is/is not** a function machine because:

The Biller Noggin Machine



The Biller Noggin Machine



Input	Output



W2L:

The Biller Noggin Machine *is/is not* a function machine because:

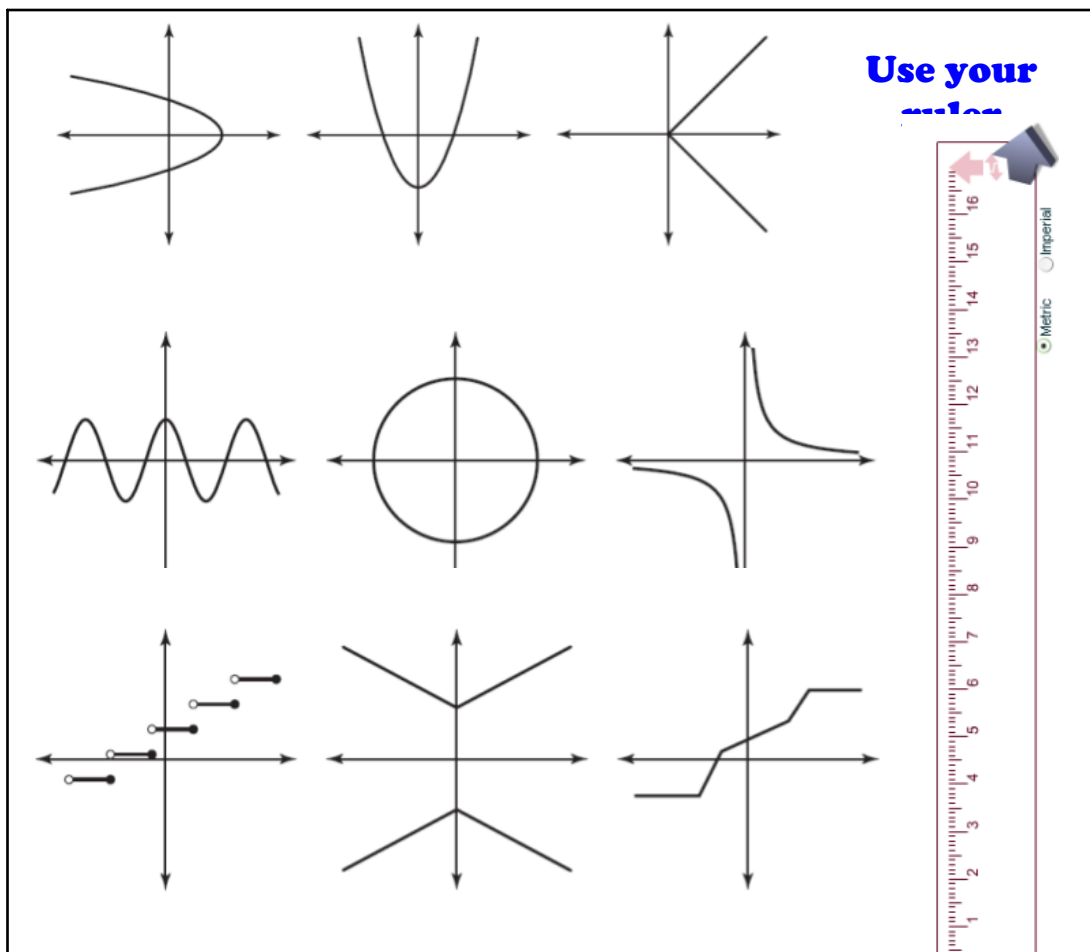
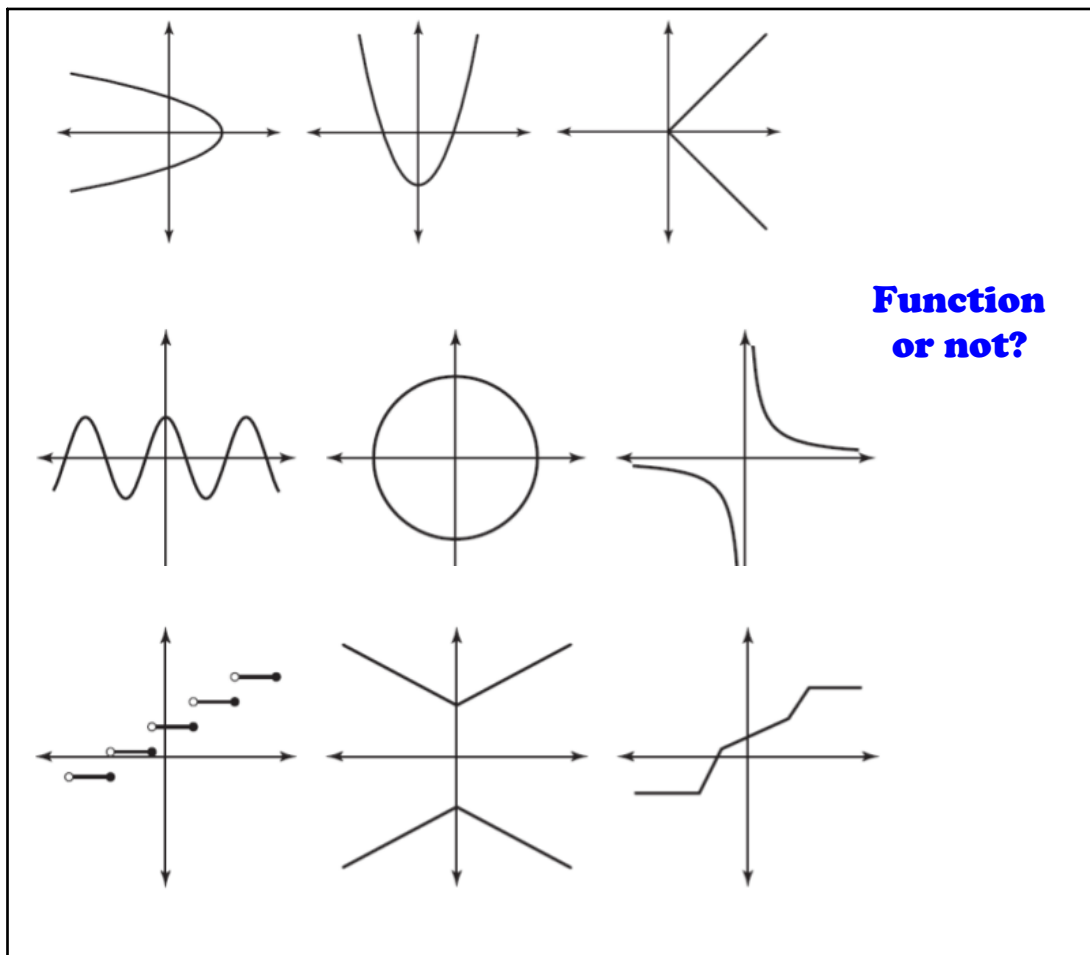
Input	Output
\$1.00	Sponge Bob Square Pants
\$1.00	Bouncy Ball
\$1.00	Teddy Bear
\$1.00	Whistle
\$1.00	Rubber Ducky
\$1.00	Genuine gold-like
\$1.00	Absolutely nothin

The
CLAW



W2L:

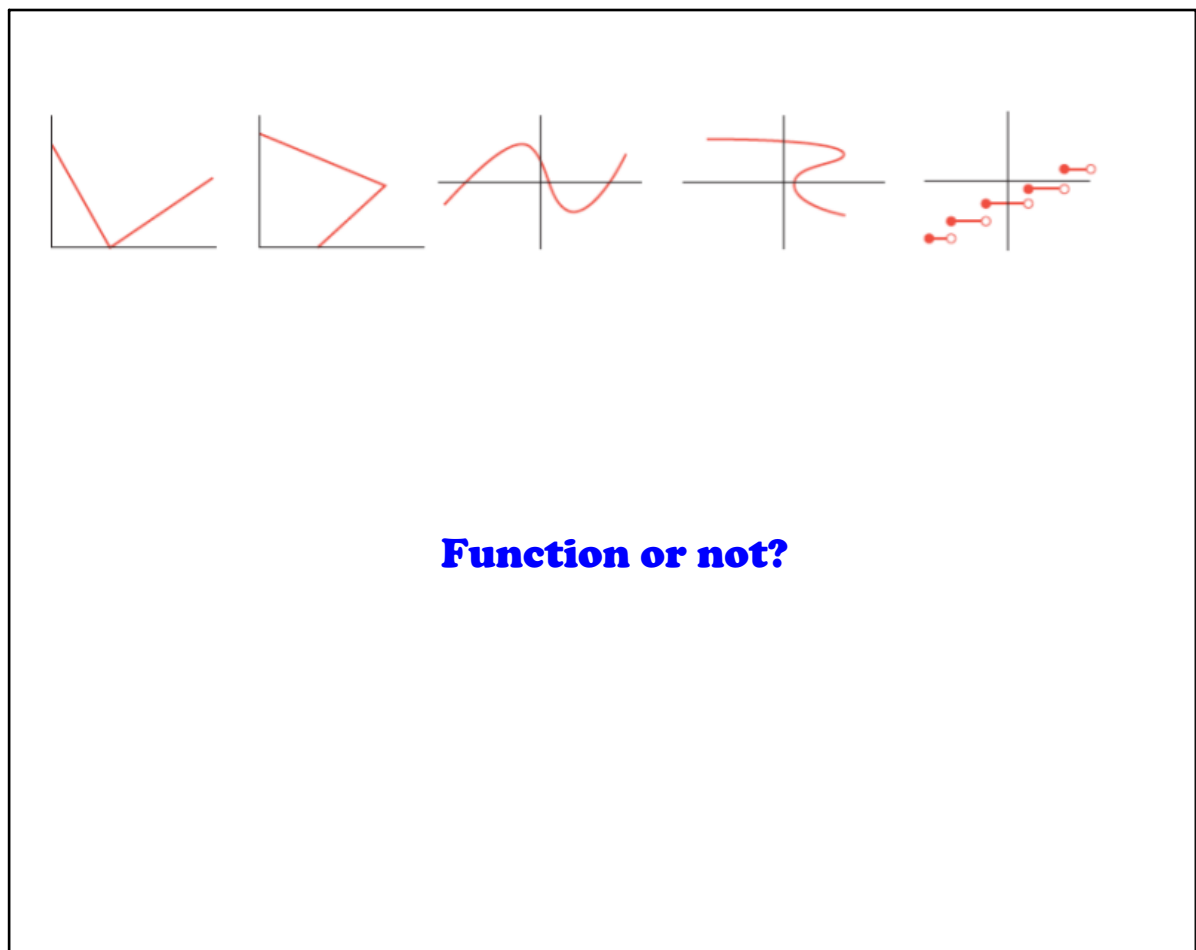
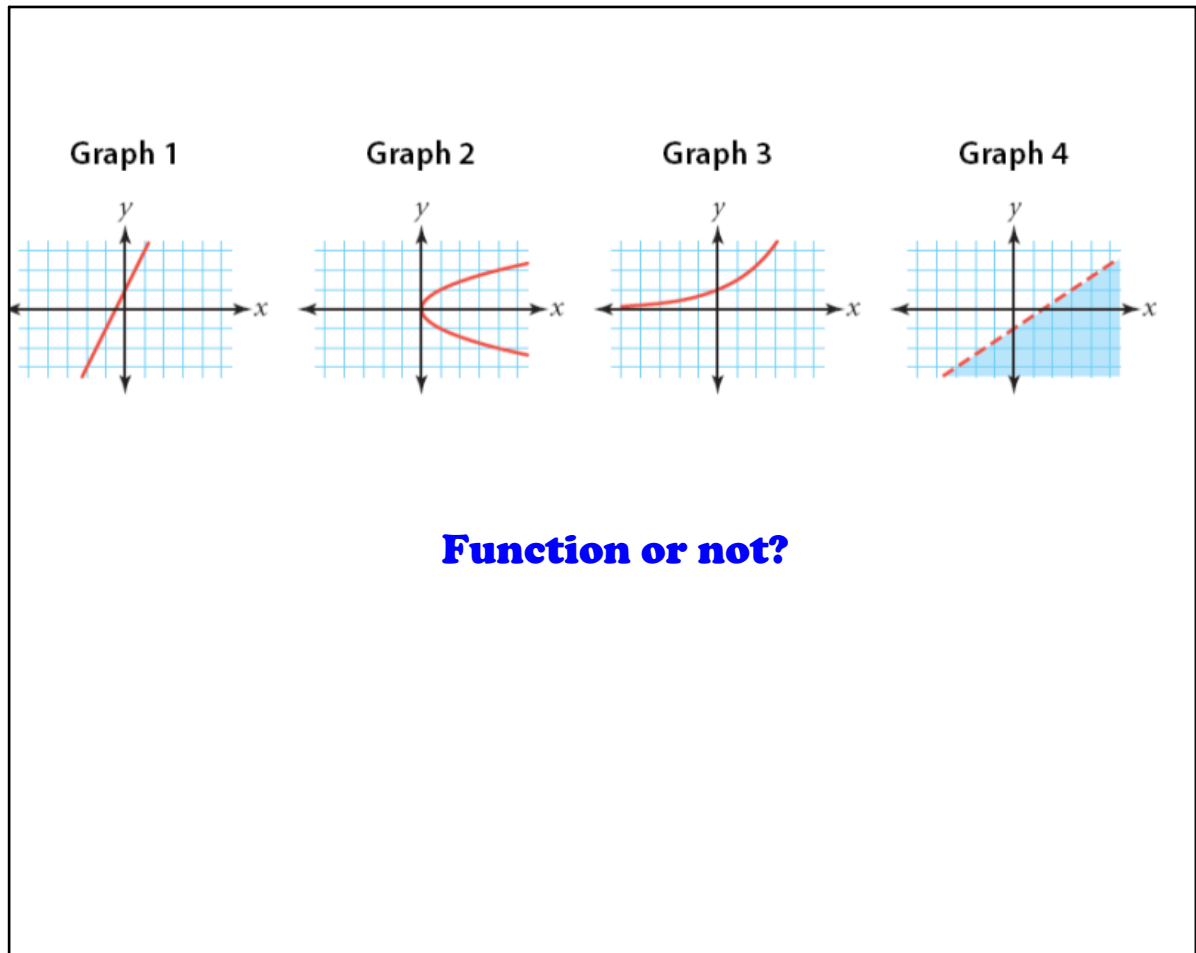
The Claw **is/is not**
a function machine because:



W2L:

The _____ will help me decide if a graph is a function or not because...

A function is a relation between input and output values. Each input has exactly one output. The **vertical line test** helps you determine if a relation is a function. If all possible vertical lines cross the graph once or not at all, then the graph represents a function. The graph does not represent a function if you can draw even one vertical line that crosses the graph two or more times.



Does each relationship in the form $(input, output)$ represent a function? If the relationship does not represent a function, find an example of one input that has two or more outputs. This is called a **counterexample**.

- a. $(city, ZIP\ Code)$
- b. $(person, birth\ date)$
- c. $(last\ name, first\ name)$
- d. $(state, capital)$



Function or not?

Table 1

Input x	Output y
-2	-3
-1	-1
0	1
1	3
2	5
3	7
4	9

Table 2

Input x	Output y
4	-2
1	-1
0	0
1	1
4	2
9	3
16	4

Table 3

Input x	Output y
-2	0.44
-1	0.67
0	1
1	1.5
2	2.25
3	3.37
4	5.06

Table 4

Input x	Output y
-2	-3
-1	-5
1	-1
1	-3
2	-10
3	-2
3	-8

$$y = 3 - x$$

Input x	Output y
-4	
-3	
-2	
-1	
0	
1	
2	

```

Plot1 Plot2 Plot3
Y1=3-X
Y2=
Y3=
Y4=
Y5=
Y6=
Y7=

VARS Y-VARS
1:Function...
2:Parametric...
3:Polar...
4:On/Off...

```

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FUNCTION
1:Y1
2:Y2
3:Y3
4:Y4
5:Y5
6:Y6
7:Y7

Y1(-4) 7
Y1(-3) 6
Y1(-2) 5
Y1(-1)

```

$$y = 6.8 + 0.5x$$

Input x	Output y
-6	
-2.4	
1	
2.8	
-14	
3.1	
-17.5	

Summary:

How does the vertical line test help you decide which graphs are functions?

Homework

7.2 Worksheet
answers are on the wiki!

Out:

Draw two graphs.
One that is a function
and one that isn't a
function.